



AVIATION & MISSILE
RD&E CENTER

WE ARE THE Aviation and Missile Research, Development and Engineering Center

WE ARE STRATEGICALLY MINDED

The U.S. Army Aviation and Missile Research, Development and Engineering Center (AMRDEC), a subordinate organization to the Research, Development and Engineering Command (RDECOM), is the Army's focal point for providing research, development and engineering technology and services for aviation platforms and missile systems across the life cycle. AMRDEC has a long history of providing unparalleled service to its aviation and missile customers, while always striving to provide the greatest service to its ultimate customer, the Warfighter, by providing technology and weapon system solutions to ensure his/her victory on the battlefield.

MISSION

Deliver collaborative and innovative technical capabilities for responsive and cost-effective research, product development, and Life Cycle Systems Engineering solutions.

VISION

Be a Warfighter-focused valued team of world leaders in aviation and missile technologies and Life Cycle Systems Engineering.

VALUES

- Loyalty
- Duty
- Respect
- Selfless Service
- Honor
- Integrity
- Personal Courage
- Caring
- Communication
- Teamwork
- Technical Excellence

PURPOSE

As an innovative workforce, we enable the world's premier aviation systems, missile systems and related technologies to defend the freedom of our nation and allies.



They are our Customer
THEY ARE OUR PURPOSE

A NOTE FROM OUR DIRECTOR

The Army and the nation are entering a period of significant change, which includes a transition from conflict to sustainment in an uncertain and contentious world, a strategic focus pivot from the Middle East and Europe to the Asia-Pacific region, and a resourcing environment shift from one of plenty to one of fiscal austerity. We will adapt to these changing conditions as we effectively execute the AMRDEC mission to deliver collaborative and innovative technical capabilities for responsive and cost effective research, product development and life cycle systems engineering solutions.

The AMRDEC has three main priorities: First, continue the technical excellence established through years of performing our Science and Technology Mission and supporting our reimbursable customers. Secondly, recruit, develop and retain our experienced workforce to enable AMRDEC to continue to provide our core technical capabilities for the foreseeable future. Finally, upgrade the aging infrastructure to provide our employees with quality of life and enable AMRDEC to continue to provide world class technical services.

STATISTICS

FY14 STRENGTH

Civilian: 3,031

Military: 22

Contractor: 7,719

TOTAL: 10,772 (80.7% S&E)

CURRENT S&E PERSONNEL

PhD: 4% (108)

MS: 38% (927)

BS: 100% (2,451)

Average Age: 46.5 yrs

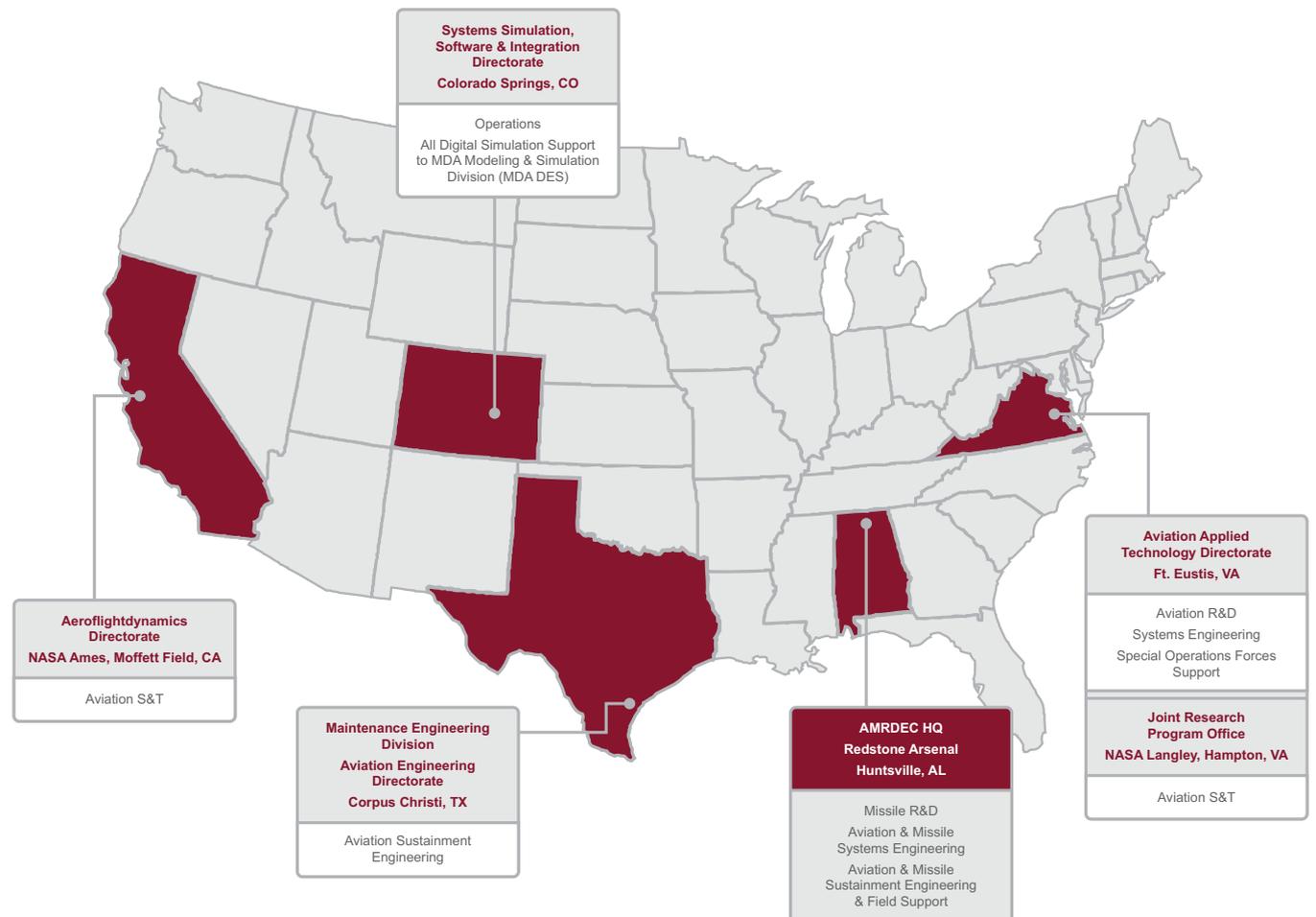
Senior Research Scientists: 4

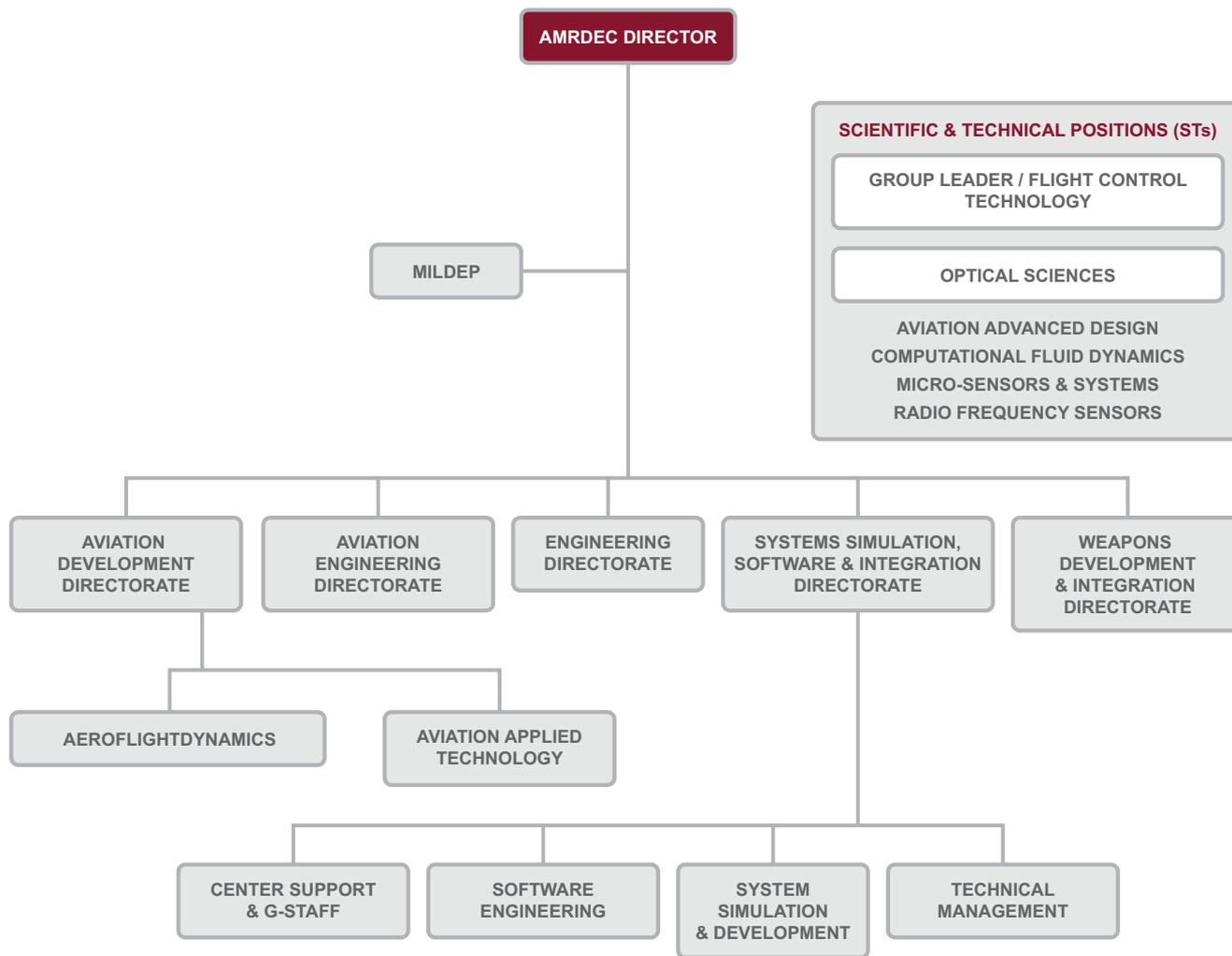
University / College Professors: 17

Civilian & Military numbers as of 11 Sep 2014. Contractor numbers as of 30 June 2014.

OUR LOCATIONS

AMRDEC is a large organization with facilities spread across the U.S. Headquartered at Redstone Arsenal (Huntsville, Alabama), we have laboratories for innovative work on sensors and electronics, propulsion systems, aerodynamic structures, modeling and simulation, life cycle software development, and technical testing. We also have laboratories at Fort Eustis and Hampton, Virginia and Moffett Field, California where Army and NASA aviation facilities, such as instrumented test ranges and wind tunnels, are used for advanced rotorcraft technologies to support our role as lead service for rotorcraft science and technology. Our responsibility for aircraft extends to airworthiness release authority for issuing the technical document that provides instructions and limitations for safe flight of an aircraft system, subsystem, or allied equipment. Finally, AMRDEC has personnel devoted to aviation sustainment and engineering located in Corpus Christi, Texas and serving as Liaison Engineers (LEs) around the globe. In addition to these assets, AMRDEC and our customers also benefit from additional resources available at Redstone, including test ranges and facilities managed by the Redstone Test Center (RTC), the FBI's Hazardous Devices School, and the Redstone Arsenal Airfield.





CHAIN OF COMMAND



AMRDEC ORGANIZATION CHART

AMRDEC is part of the U.S. Army Research, Development and Engineering Command (RDECOM), which has the mission to develop technology and engineering solutions for America's Soldiers. RDECOM is a major subordinate command of the U.S. Army Materiel Command (AMC). AMC is the Army's premier provider of materiel readiness – technology, acquisition support, materiel development, logistics power projection, and sustainment – to the total force, across the spectrum of joint military operations. If a Soldier shoots it, drives it, flies it, wears it, eats it or communicates with it, AMC provides it.



MISSION, FUNCTIONS, and Directorates Overview

AMRDEC is the Army's focal point for providing research, development, and engineering technology and services for aviation platforms and missile systems across the life cycle. AMRDEC provides a wide array of technologies, hardware and software applications, and products and services. These run the gamut from game-changing technologies to detect and destroy threats, enhance performance, lethality, survivability, and reliability of aviation and missile systems, along with programs to miniaturize missile and aircraft components, provide modeling and simulation applications for these technologies and systems, and the associated training applications. AMRDEC also serves as the Department of Defense (DoD) lead for rotorcraft Science and Technology (S&T) and gel propellants. AMRDEC has one of the few Capability Maturity Model (CMM) Level 4 software engineering facilities in the Army, certified by the world-renowned Software Engineering Institute (SEI). AMRDEC's Prototype Integration Facility (PIF) has quickly become the Army's premier rapid response organization that provides AMRDEC customers with the end-to-end capabilities they deserve.

The Army depends on AMRDEC to execute an integrated portfolio of research, development and engineering efforts that are responsive to the highest priorities as defined by our stakeholders and customers. The depth and breadth of our missile and aviation core competencies serve as a unique national asset. AMRDEC's core technical competencies depend upon a preeminent, multi-disciplinary, adaptive workforce that conducts leading edge research, development and life cycle engineering, while promoting discovery and innovation across government, academia and industry.

AVIATION SYSTEMS TECHNOLOGIES

- Basic Research and Concepts Development
- Aerodynamics/Aeromechanics
- Air Vehicle Structural Integrity
- Aircrew Integration
- Weapons Integration
- Sensor Integration
- Air Vehicle Survivability
- Avionics Integration
- Propulsion and Drivetrain
- Aircraft Systems
- Aviation Autonomy and Teaming

- Aircraft Design/Modification/Integration/Testing/Qualification
- Airworthiness Assurance

MISSILE SYSTEMS TECHNOLOGIES

- Basic Research
- Propulsion
- Electronics, Guidance and Sensors
- Aerodynamics and Computational Methods
- Lethality
- Launchers and Structures
- Concept Development

CROSS CENTER ENGINEERING SPECIALTIES

- System Engineering, Integration and Interoperability
- Software Engineering
- Reliability, Availability and Maintainability
- Sustainment, Industrial Base and Obsolescence
- Quality Engineering and Management
- System Safety
- Manufacturing Technology and Production Support
- Multidiscipline Acquisition and Project Engineering Leadership
- Test and Evaluation
- Maintenance, Life Cycle Cost Reduction and Logistics Engineering
- Model and Simulation Design, Development, Verification, Validation and Accreditation (VV&A), and Analyses
- Engineering Prototype Design and Development
- Configuration Management
- Cybersecurity

AVIATION DEVELOPMENT DIRECTORATE (ADD)

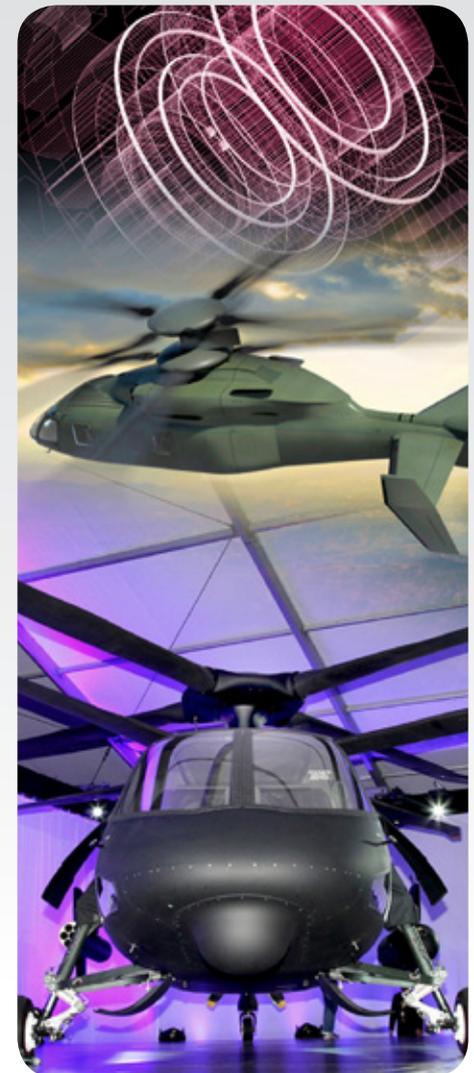
Mission

Empower a preeminent, distributed and collaborative Aviation workforce that discovers new technologies and approaches, develops advanced concepts, demonstrates technical maturity, and delivers Warfighter capabilities to dominate the battlefield. These advances are administered through the planning, management, and execution of Science and Technology (S&T) programs (i.e. basic research, applied research, and advanced development).

Overview

ADD's vision is to develop dominant aviation capabilities for the Warfighter. Our purpose is to lead aviation development that will continue to transform Warfighter needs into capabilities. ADD functions as the Army's Aviation S&T organization to manage and conduct basic and applied research, advance technology development, mature technology to maintain and develop current and future fleet. ADD accomplishes these activities by empowering a distributed workforce of technical leaders to discover new technologies and approaches, develop advanced concepts, and demonstrate technical maturity and military usefulness, enabling the Army to deliver game-changing aviation capabilities.

ADD is headquartered at Redstone Arsenal, AL with two key centers located in Virginia and California. The Aviation Applied Technology Directorate (AATD) is located at the Joint Base Langley-Eustis, VA, and the Aeroflightdynamics Directorate (AFDD) is located at National Aeronautics and Space Agency (NASA) Ames at Moffett Field, CA. ADD is a geographically dispersed organization, leveraging unique test facilities, personnel, and capabilities such as: ballistics, countermeasures, and structural test facilities located at Ft. Eustis, VA. The National Full-Scale Aerodynamics Complex in coordination with the United States Air Force/Arnold Engineering Development Center (USAF/AEDC) and the Rotor Test Apparatus, at Moffett Field, California and the Subsonic Aerodynamics and Transonic Dynamics Wind Tunnels in Hampton, Virginia.





AVIATION ENGINEERING DIRECTORATE (AED)

Mission

Deliver responsive airworthiness solutions throughout the system life cycle. Retain the leadership and engineering expertise necessary to provide valued products to our aviation customers.

Overview

The AED serves as the Airworthiness Authority for the Army Aviation Enterprise. The AED comprises approximately 800 civilian and contractor engineering professionals delivering responsive airworthiness solutions throughout the system life cycle. As the delegated airworthiness authority for U.S. Army aircraft, the AED serves the Army customer base including the Aviation and Missile Life Cycle Command, the Program Executive Office for Aviation, and the Army Special Operations Aviation community. The AED serves as the Army airworthiness interface with the FAA and other services. The AED serves as National Airworthiness Council (NAC) Army Principal. The AED prepares, supports, and maintains airworthiness aeronautical design standards.

ENGINEERING DIRECTORATE (ED)

Mission

Serve the Warfighter needs through world class life cycle engineering, providing indispensable technical capabilities in the areas of systems engineering, mission assurance, prototype engineering, production and sustainment.

Overview

ED's life cycle engineering functions are accomplished through the following 10 ED Core Functions: Systems Engineering Management, Test and Evaluation Management, Production Engineering, Product Assurance, Configuration Management, PIF/Rapid Response, Logistics Engineering, Industrial Base Assurance, Life Cycle Cost Reduction, and Manufacturing Technology.

ED also serves as the lead for the following efforts:

- Materiel Release Review Board Vice-Chairman
- Standardization Executive for AMCOM and PEO Aviation
- FRAB - Functional Requirements Authentication Board
- AMCOM Industrial Base Advocate
- Team Redstone Industrial Base Enterprise Chairperson
- AMCOM Obsolescence Management Proponent
- AMCOM Product Assurance Advocate
- Senior Independent Review Teams
- Command Value Engineering/LCCR Manager
- DoD Conditional and Reliability Centered Based Maintenance Working Integrated Product Team (WIPT) Chair
- Stockpile Reliability Program Manager for PEO Missiles and Space
- Army Representative for Development of New Systems Engineering (SE) Standard

ED provides world class life cycle engineering to the U.S. Army Aviation and Missile Life Cycle Management Command (AMCOM), Team Redstone, the Missile Defense Agency (MDA), and elements of the Department of Defense (DoD).



SYSTEMS SIMULATION, SOFTWARE & INTEGRATION DIRECTORATE (S3I)

Mission

Provide collaborative and innovative life cycle software engineering, modeling and simulation, systems development, and technical systems management products and solutions as well as mission enabling center support.

Overview

The S3I provides mission excellence in all disciplines staying focused on the customer to enable delivery of solutions to the Warfighter. The S3I is a highly skilled, credible, and diverse workforce that is responsive to customer requirements (cost, schedule, and performance). The S3I provides the AMRDEC with state-of-the-art facilities and infrastructure and applies our capabilities across the Army and DoD Enterprise. The S3I is comprised of the Technical Management Directorate (TMD), Software Engineering Directorate (SED) and the Systems Simulation and Development Directorate (SSDD).

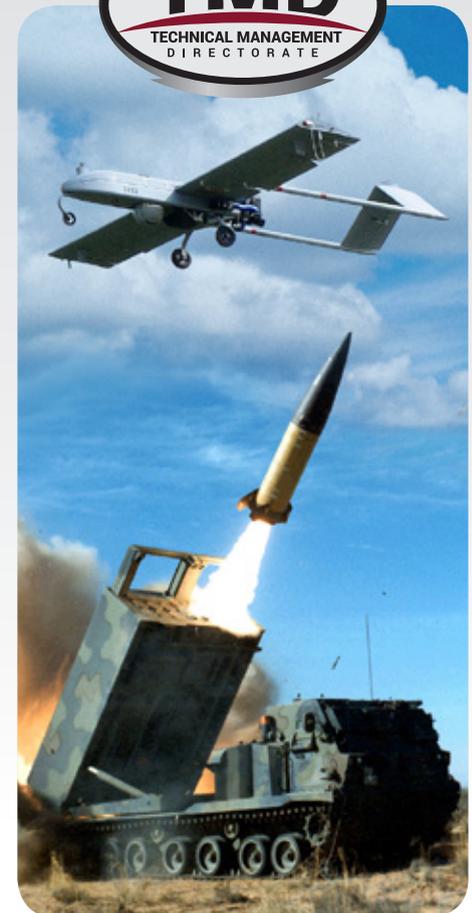
Technical Management Directorate (TMD)

Mission

Provide senior acquisition leaders and key technical experts who collaborate across functional boundaries to develop synergistic, innovative total system solutions in direct support of the Program Executive Office (PEO) for Aviation, the PEO for Missiles and Space, the Missile Defense Agency (MDA), and their associated Program Management Offices (PMOs).

Overview

The TMD fields a diverse group of broad-skilled, highly experienced technical/engineering professionals, who team with AMRDEC Directorates and the Acquisition & Sustainment Commands, in support of the PMs/PEOs to provide superior lifecycle technical and acquisition management of Warfighter systems and products in the defense of the United States and its allies.





SYSTEMS SIMULATION, SOFTWARE & INTEGRATION DIRECTORATE (S3I)

Software Engineering Directorate (SED)

Mission

Provide world-class system and software engineering life cycle management support to our customers and Warfighters.

Overview

The AMRDEC SED is one of the Army's software engineering life cycle management centers and is a recognized leader in supporting the acquisition, research, development, and sustainment of some of the nation's most sophisticated weapon systems. SED provides state-of-the-art software support to non-tactical government agencies and programs, and remains an expert in the Army's policies and practices regarding cyber security, Information Assurance, software reuse, software metrics, post deployment software support, process improvement, computer resource margins analysis and risk management. The SED's risk based approach to performing Verification and Validation (V&V) is designed to focus on identified problem areas to ensure effective software engineering support with minimum cost. Using the facilities and the numerous tactical hardware and software laboratories, the SED provides the highest quality support in the areas of joint interoperability testing, gaming, and software and systems engineering.

Functions

- Computer Hardware/Software Technology
- Independent Verification and Validation (IV&V)
- Aviation Flight Safety/Airworthiness Software Assessments
- Software Development and Sustainment
- Information Assurance/Cyber Security
- Interoperability Engineering and Test (IET)
- Software Fielding/New Equipment Training
- Configuration and Data Management
- Software Quality Engineering

Divisions

- Acquisition & Technology Engineering Division (BAT)
- Aviation Division (BAV)
- Command, Control, Communications & Interoperability Division (BAC)
- Configuration and Data Management Office (BAO)
- Software Development Division (BAS)
- System Support Division (BAY)
- Software Quality Division (BAQ)
- Tactical Missile & Unmanned Systems Division (BAU)
- Joint Systems Integration Division (BAJ)
- Weapons Support Division (BAW)



SYSTEMS SIMULATION, SOFTWARE & INTEGRATION DIRECTORATE (S3I)

Systems Simulation And Development Directorate (SSDD)

Mission

Deliver collaborative and innovative engineering solutions in the areas of system design, development, integration, analyses, modeling, and simulation.

Overview

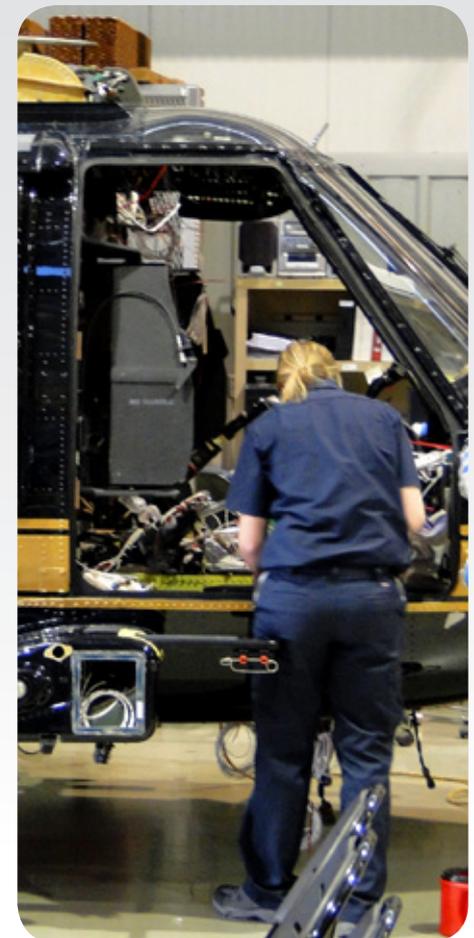
The AMRDEC System Simulation & Development Directorate (SSDD) provides the Army and other DoD agencies high-fidelity, life cycle, modeling, and simulation capabilities for their aviation and missile weapon systems. This directorate develops and provides analyses utilizing six-degrees-of-freedom simulations with embedded tactical software, In-band Imaging Infrared (IIR), laser and Radio Frequency (RF), Hardware-In-The-Loop (HWIL), virtual/live experimentation, virtual prototypes, constructive simulations, and large-scale, distributed simulations. This Directorate provides end-game analyses to evaluate lethality, vulnerability, and survivability, and is the AMRDEC lead for missile and fixed wing Unmanned Aerial System (UAS) aerodynamics technology. As the primary AMRDEC organization responsible for modeling and simulation technology development, SSDD develops, maintains, and operates numerous simulation facilities to support internal and external customers.

Functions

- Design and Develop Advanced, High Fidelity Digital and Hardware-In-the-Loop (HWIL) Models and Simulations for Aviation and Missile Systems
- Conduct Performance and Effectiveness Evaluations for Aviation and Missile Systems
- Design and Develop Virtual Prototyping Facilities for User Evaluations of Aviation and Missile Applications
- Define and Develop Modeling and Simulation Methods and Technologies for DoD Applications

Divisions

- Modeling & Simulation Technology
- Life Cycle Development
- Enterprise Technology
- Operational Simulation Technologies
- Business & Operations





WEAPONS DEVELOPMENT & INTEGRATION DIRECTORATE (WDI)

Mission

WDI conducts research, exploratory and advanced development, technology demonstrations, and provides engineering and scientific expertise in all aspects of weapon system design, development, improvement, and integration for the Army. This encompasses component development, testing of sensors, terminal guidance, data links, fire control, propulsion, advanced materials, lethal mechanisms, sub-system and system level integration, navigation and control devices. WDI is responsible for the integration of these weapon systems on manned and unmanned platforms, serves as a life cycle management enterprise for DoD missile technology, and supplies essential weapons systems engineering support to our customers.

Overview

WDI provides technical and functional engineering support to all elements of the parent organization: RDECOM, AMCOM, PEO Aviation and Missile/Project/Product offices, and other government activities. Divisions within WDI include the following:

Missile Development

- Advanced Technology
- Systems Design & Integration
- Weapons Sciences
- Protection Capability Area
- Fire Support Capability Area
- Ground Tactical Capability Area
- Aviation Capability Area

Sensors, Guidance & Electronics

- Infrared & Optical Technology
- Radio Frequency Technology
- Image & Signal Processing Technology
- Navigation Technology
- Electronics & Computer Technology

Propulsion & Structures

- Systems & Warheads
- Platform Integration
- Aerospace Materials
- Energetic Materials
- Missile Sustainment
- Controls & Electronics
- Propulsion Technology



External RECOGNITION

AWARDS

- 2015 American Helicopter Society Alexander A. Nikolsky Lectureship Award
- 2014 National Defense Industrial Association (NDIA) Leadership of Excellence Award
- 2013 DoD Diminishing Manufacturing Sources Material Shortage (DMSMS) Team Achievement Award
- 2013 DoD Best Value Engineering Organization
- 2013 Secretary of the Army Award for Excellence in Contracting - CH-47F Multiyear II Contract Team (Technical Evaluation Team Representation)
- 2013 “Technology Rising Star” by Women of Color Magazine for Achievements as Test Engineer
- 2013 Secretary of Defense Medals for Senior Quality Assurance Representatives and Government Ground Flight Representative in support of the Global War on Terrorism
- 2013 Recognitions into the Ancient Order of Saint Barbara and the Honorable Order of Saint Michael, Knight Award
- 2013 Selection into the Army Senior Enterprise Talent Management Program
- 2013 Recognition for Performing Lean Six Sigma (LSS) and Black Belt Projects
- 2013 Commendation for support at the HELLFIRE Forward Test and Repair Facility (FTRF)
- 2013 Recognition for participation in the THAAD and AN/TPY-2 Radar Materiel Release Conferences
- 2013 Lower Tier Program Office recognized ED employees as “PATRIOTs of the Month” for contributions to the Production Readiness Review (PRR) conducted for the PAC-3 Missile Segment Enhancement Program
- 2013 AMRDEC Team Wins American Helicopter Society (AHS) International Harry T. Jensen Award for Design and Development of Apache AH-64E Composite Tailboom
- 2013 AMRDEC Team Wins AHS International Grover E. Bell Award for Drag Reduction Study of Armed Scout Helicopter
- 2013 Renewal of ISO 9001:2008 Certification, ESD
- 2012 HASBAT Small Business Advocate Award of Excellence
- 2012 Alabama Quality Award (Level II for PIF)
- 2012 Alabama Performance Excellence Award (Level I for ED)
- 2012 Space and Missile Defense Technical Achievement Team Award by Air, Space, and Missile Defense Association (ASMDA)
- 2012 Research and Development Achievement (RDA) Award, presented by RDECOM
- An “Eight-Time” Recipient of the Army’s Greatest Invention Award-PIF (as voted on by the Soldier)
- Multiple Achievement Medal for Civilian Service



AMRDEC OUTREACH

“Community involvement includes multiple, systematic STEM engagements from Primary Education through Undergraduate Engineering Institutions to help initially spark interest and energize those already headed into these careers who will ultimately become part of the future AMRDEC workforce. This comes in the form of hands-on project efforts to see the practicality of math and science via ‘engineering in motion’ examples as well as guest leadership speakers to reinforce the real human connection across the entire community landscape.”

— Mr. James Lackey, Director



The Warfighter is NUMBER ONE

CUSTOMER BASE

- RDECOM
- PEO Aviation
- PEO Missiles & Space
- Other PEOs
- Aviation S&T
- Missile S&T
- AMCOM/ALC
- LOGSA
- SMDC
- USASAC
- ACC
- TACOM
- Army Depots
- ATEC/RTC
- Missile Defense Agency (MDA)
- Defense Logistics Agency (DLA)
- Rapid Equipping Force
- SOCOM
- United States Navy, Marine Corps & Air Force
- DARPA
- NASA
- Academia
- Industry
- JIEDDO
- Department of Homeland Security



RDECOM

AMRDEC

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